LaTeX: Is it the Standard for Scientific Document Preparation?

Author
Enago Academy

Post Url
https://www.enago.com/academy/latex-is-it-the-standard-for-scientific-document-preparation/

LaTeX is a document preparation system based on a typesetting system called “TeX”, developed by Donald Knuth (Professor Emeritus at Stanford University) in 1974. The word TeX finds its origins in the Greek word for art/skill/craft (and is pronounced “tech” as in “technology.”) Professor Knuth designed TeX to facilitate the creation of documents that incorporated complex mathematical text (Unwalla, 2006).

In 1985, computer scientist Leslie Lamport enhanced TeX by incorporating a set of macros that separated content and style in the document (DiMitri, 2016), making TeX easier to use. This new system adopted part of Lamport’s name to become “LaTeX.” For the last 20+ years, writing scientific papers with LaTeX has become the *defacto* standard for many in the scientific community.

Functionality and Usage

Academic researchers in the fields of mathematics, physics, computer science, and engineering are drawn to LaTeX because of its exceptional typesetting capabilities, especially with regards to the use of mathematical equations and scientific figures. LaTeX can create scientific documents that look professional and accurately reflect the

precise equations and other graphics necessary to express the researcher's work.

Some other advantages of using this to prepare a research paper are:

- It is used extensively in the academic/scientific community
- It can be viewed/edited with any text editor
- Its formatting is consistent and automatically employed once set
- The software is free

For academic researchers whose work is not laden with equations or figures, but desire the polished look of a LaTeX document, it is possible to convert word-processed documents into LaTeX files. Technical information regarding the specific functionality of LaTeX and the directions for use can be found in various online and offline resources.

Drawbacks in LaTeX

Although writing scientific papers with LaTeX is undeniably useful to researchers, however, its usefulness has been questioned by some researchers who find that the bad outweighs the good when it comes to scientific documents that are more text-heavy and don't incorporate extensive mathematical formulae or scientific figures.

In his article, "The LaTeX fetish (Or: Don't write in LaTeX! It's just for typesetting)," Daniel Allington says that writing with LaTeX is slow and cumbersome. It requires the incorporation of so much code, and the editing process is just as inefficient because the reader has to wade through that code while trying to determine if the content is accurate and well-written. He also references difficulties with the installation and usage of the LaTeX software. He claims that using programs such as Microsoft Word's Outline View, LibreOffice Writer's Navigator, and Zotero (for citations and bibliography) can provide academic researchers with formatting tools comparable to those found in LaTeX. These programs have the added benefit of an efficient and straightforward writing environment in which writers and editors can easily assess content.

In their study entitled, "An Efficiency Comparison of document Preparation Systems Used in Academic Research and Development," Markus Knauff and Jelica Nejasmic asked 40 researchers across different disciplines to prepare scholarly texts with either Microsoft Word or LaTeX. They divided these researchers into four categories: 1) Word novices, 2) Word experts, 3) LaTeX novices, and 4) LaTeX experts.

Their scholarly texts included simple continuous text, text with tables and subheadings, and complex text with several mathematical equations. Surprisingly, on most measures, even the expert LaTeX users performed worse than the novice Word users.

The study suggested that:

- LaTeX should be used only for documents containing abundant mathematical equations

- LaTeX “reduces the users’ productivity and results in more orthographic, grammatical, and formatting errors, more typos, and less written text than Microsoft Word over the same duration of time”

Despite the results of their study, Knauff and Nejasmic found that LaTeX users were strangely attached to the system even though it diminished usability and productivity. This rather fond adherence to academic writing with LaTeX was echoed in many of the references cited in this article. It seems that once scientists become familiar with the system, they find a powerful satisfaction in its use and in the look of the documents it produces.

Staying Power of LaTeX

The LaTeX system owes its staying power to the loyal users and to the fact that it provides a template preferred (and sometimes required) by some journals. LaTeX assists in producing journal articles and presentation materials in a standard look. Academic researchers who are new to the publishing world may want professional help to enhance their LaTeX document.

Even Allington admits that LaTeX is better than a word processor for typesetting and “requires fewer aesthetic choices and less design expertise than a desktop publishing package.” Mathematicians and engineers, in particular, would not be able to produce the quality of work without this system. Formulae and figures need accurate and standardized representations.

In spite of all of its limitations as a writing tool, LaTeX, in its over-twenty-year history, does not seem have lost any ground in the scientific community as the *defacto* standard for writing scientific papers.

Cite this article

Enago Academy, LaTeX: Is it the Standard for Scientific Document Preparation?. Enago Academy. 2017/05/15. https://www.enago.com/academy/latex-is-it-the-standard-for-scientific-document-preparation/